Easytork

Easytork Control Actuator

(F Series – For Valves With Splined Shafts)

Better or Equal Performance For Control Valve Over Spring and Diaphragm

Easy New Installation or Retrofit to Valves With Splined Shafts

The Smallest and The Lightest Actuator for Control Valve

Proprietary Solutions to Hard Problems

Patent Pending

Easytork's Vane Control Actuator ("ECA")

Better or Equal Performance, Smallest and Lightest Actuator for Control Valves

ECAs Has Better or Equal Performance than Spring-and-Diaphragm on Control Valves

Using the BenchMark™ control valve diagnostic system performed by a third party, Easytork's Control Actuator exceeds or is equal to spring-and-diaphragm for HDRL (hysteresis, dead band, repeatability and linearity.

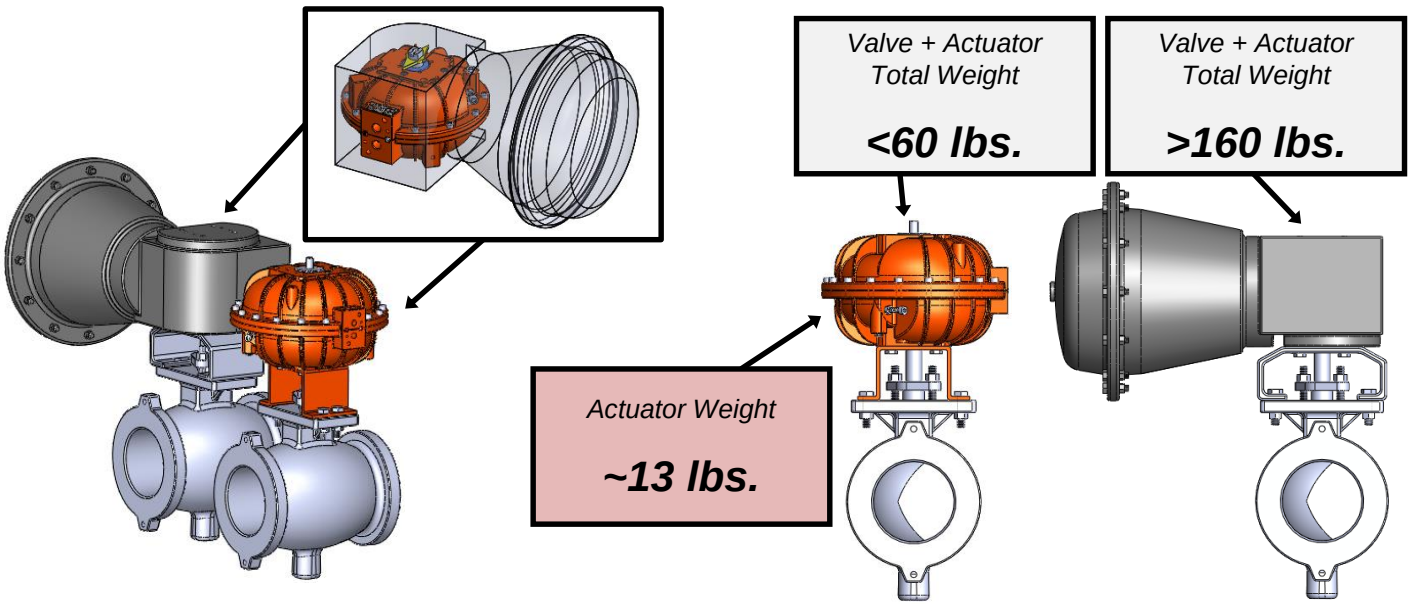
As Tested with 4" Segmented Valve, with a spline shaft diameter of ¾" on a ECA-07

Positioning System HDRL Results

Parameter	Results	Units
Hysteresis + Db, Avg	0.12	% fs
Hysteresis + Db, Max	0.21	% fs
Repeatability, Avg	0.03	% fs
Repeatability, Max	0.07	% fs
Linearity	0.24	% fs

Smallest and Lightest Control Valve Package

The Easytork actuator is the smallest and lightest actuator in the market. The size and weight on a 3" control valve package are as follows:



Easytork's Vane Control Actuator

Easy Installation. Easy Retrofit. Easy Function Change.

Easy Assembly to Valve With Splined Shaft

Assembling actuator to a control valve with a splined shaft is as easy as align, drop and bolt.

Assembling an ECA to a 1 ½" segmented valve with 5/8" spline shaft diameter

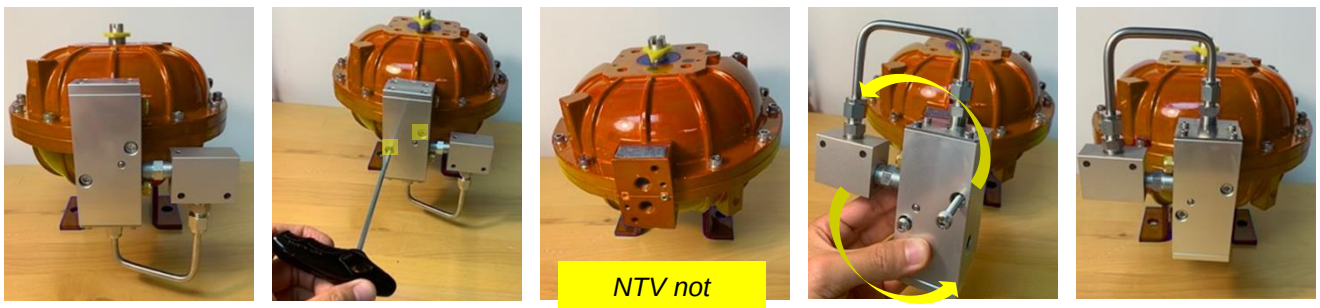
Align **Drop** **Bolt**

Note the spline shaft on valve

Easy Function Change (Fail-CW, Fail-CCW, or Double-Acting)

Installing or not installing Easytork's NAMUR Trip Valve ("NTV") determines what function (fail-safe, in CW or CCW, or double-acting) the actuator has. This can be done even when the valve is in line.

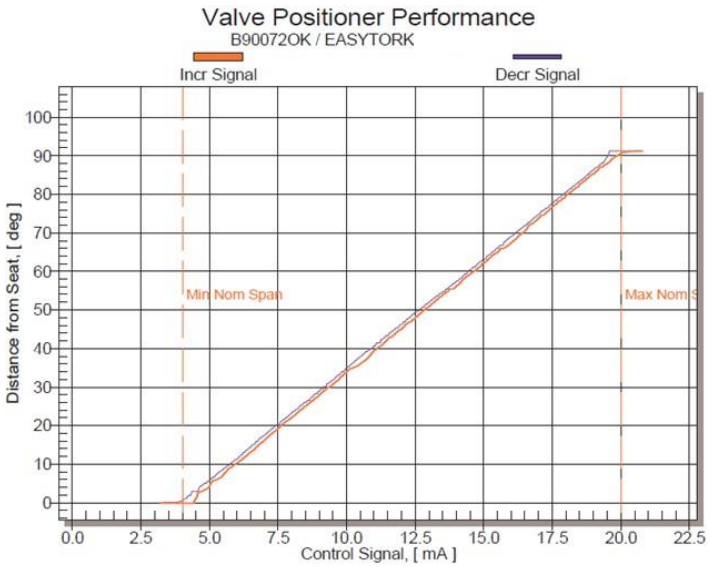
ECA in Fail-CW ↔ *Two M6 Bolts* ↔ ECA in Double-Acting ↔ *Rotate NTV 180°* ↔ ECA in Fail-CCW

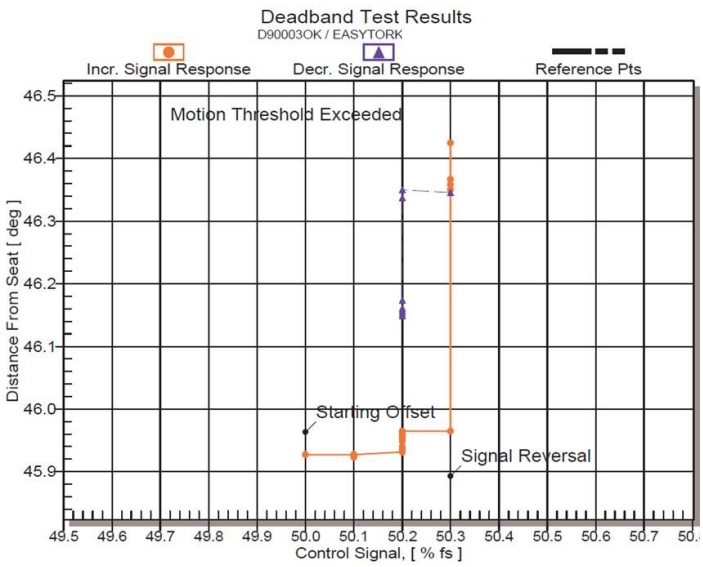


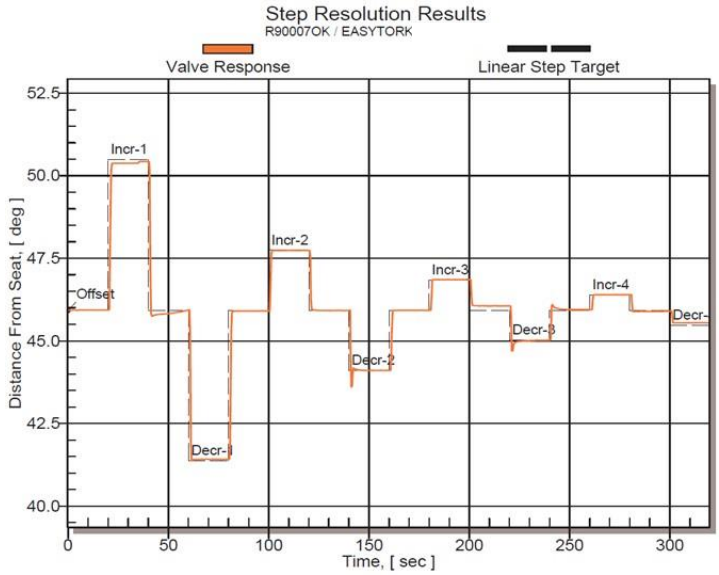
NTV not installed

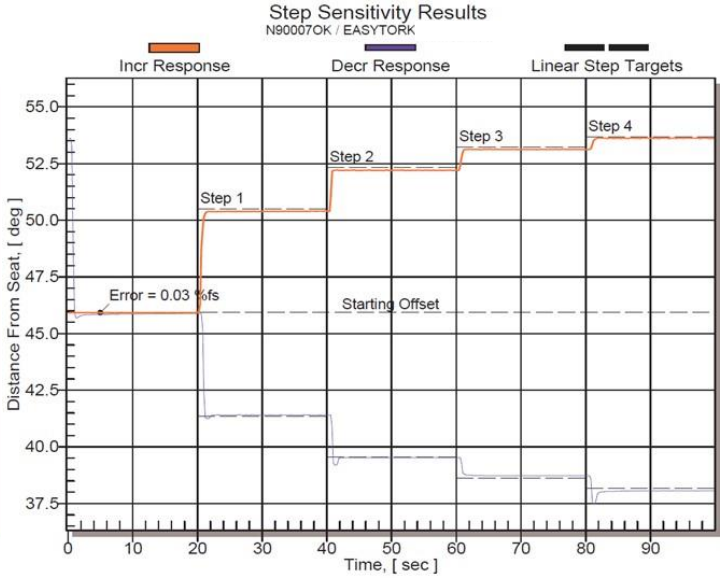
Control Valve Diagnostic Results

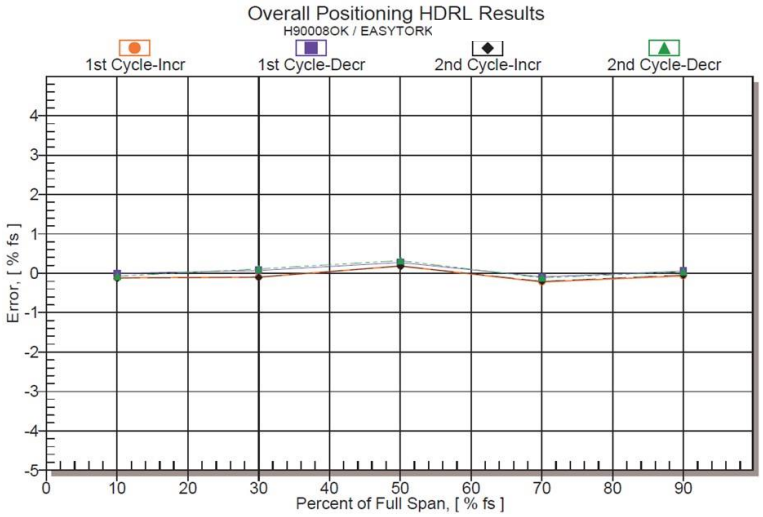
ECA has Equal or Better Performance Than Spring and Diaphragm For Control Valves











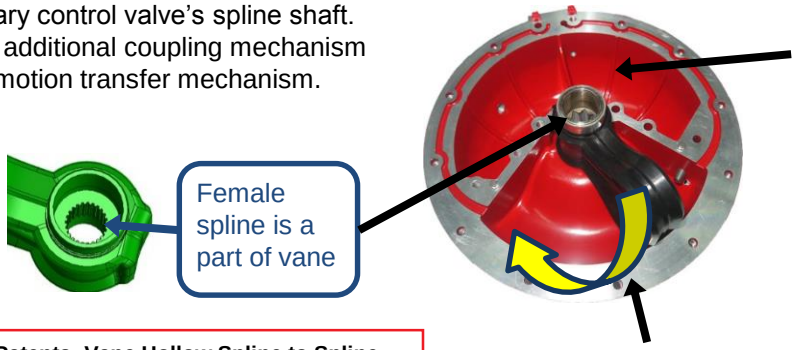
As tested with 4” segmented valve with a ¾” spline shaft diameter on a ECA-07

Unique Features and Benefits

Easytork has Proprietary Solutions To Help Solve Hard Problems

Vane Spline to Spline

ECA is the only ***rotary-to-rotary*** actuator that coupes directly with rotary control valve's spline shaft. No additional coupling mechanism or motion transfer mechanism.



Patents: Vane Hollow Spline to Spline

Patent pending

Eliminate Springs – Using Internal Air Reservoir as Spring Replacement

Air reservoirs are commonly used to emergency shut down large mission critical valves. Not using springs for fail-safe promotes better risk management and eliminates one of the weakest parts of actuators and all associated problems with springs.

Patents: Pneumatic Actuator Structure

USA = 8,671,672

Other countries pending

Ideal for Corrosive / Dirty Environment

Environment air never enters actuator. In fail-safe setup, system never pulls in environment air into actuator.

Picture below: Easytork installed in these underground mines since 2015 issue free. Other actuators require constant replacement due to poor instrument air, along with springs pulling in debris and chemicals into actuator.

Stiffness and Throttling Control

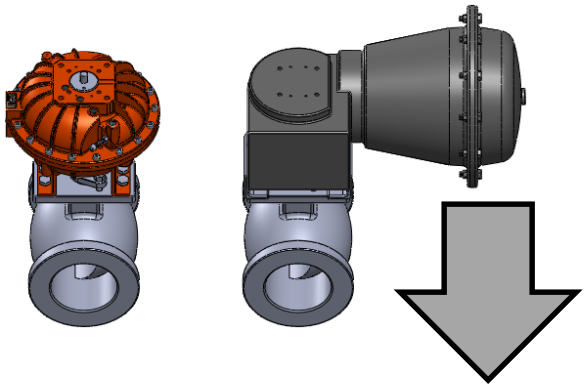
ECA can operate with air pressure up to 100 psi. Typical diaphragm actuators are limited to 40-60 psi.

High air pressure, on both sides of the actuator vane, provides exceptional stiffness for precise throttling control.

High stiffness helps withstand sudden change in dynamic fluid forces acting on valve trim, and would provide better resistance to slam shut on small openings.

Weight Balanced

Unlike spring and diaphragm actuators, ECA actuators sit directly on top of the valve and weight balanced which is ideally suited for high vibration service.



Positioner

Compatible with any positioner with NAMUR in the market.

ECA Technical Data

	Note	Unit	Model					
			ECA-05	ECA-07	ECA-10	ECA-12	ECA-14	ECA-16
Weight		Kg	2.8	5.8	10.5	22.2	39.1	75.6
		Lb	6.1	12.7	23.1	48.9	86.1	166.7
Total air volume	DA or FS	Litre	0.300	0.600	1.200	2.400	4.800	9.600
90° stroke with dead volume	CCW *or* CW	In^3	18.3	36.6	73.2	146.5	292.9	585.8
	DA and FS	Litre	0.600	1.200	2.400	4.800	9.600	19.200
	CCW *and* CW	In^3	36.6	73.2	146.5	292.9	585.8	1171.7
Stroke time								
At 5.5 bar or 80 psi, no load	*DA (open / close)*	Sec	0.36/0.36	0.45/0.45	0.59/0.59	0.75/0.75	1.34/1.34	3.30/3.30
	FS (open / close)	Sec	0.36/0.39	0.45/0.47	0.59/0.60	0.75/0.84	1.34/1.47	3.30/3.41

Technical Specifications

Travel adjustment	Standard stopper: 80° - 100°
	Extended stopper: 50° - 100°
Temperature range	Modified CR Neoprene(standard temp): -40°C to 120°C (-40°F to 248°F)
Pressure rating	2 -10 bar (30 - 150 psi)
Operating medium (standard)	Must use instrument air

Mounting Specifications

Actuator to valve	Mounting standard per EN ISO5211 (DIN3337 optional) and traditional mounting
Drive components	Parallel or diagonal square head per EN ISO5211
Accessories	NAMUR VDI/VDE 3845

Standard and Specifications Complied

ISO 5211:2001 (E)	Industrial valves – part-turn actuator attachments
Namur VDI/VDE 3845	Interface between valves, actuators and auxiliary equipments
CEN/TC 69	Basic requirements for pneumatic part-turn actuators on industrial valves
CE Marking	Machinery Directive 2006/42/EC
MESC SPE 77/211	Valve stem and stem adaptor dimensions and bracket drilling patterns for actuated quarter-turn valves
ANSI/AWWA C541-08	Hydraulic and pneumatic cylinders and vane-type actuators for valves and slide gates

ECA Technical Data (Imperial)

Torque Output

Double-Acting (In-Lb)

Model / PSI	20	30	40	50	60	70	80	90	100
ECA-05	191	286	381	477	572	667	763	858	954
ECA-07	381	572	763	954	1,144	1,335	1,526	1,716	1,907
ECA-10	763	1,144	1,526	1,907	2,289	2,670	3,051	3,433	3,814
ECA-12	1,526	2,289	3,051	3,814	4,577	5,340	6,103	6,866	7,628
ECA-14	3,051	4,577	6,103	7,628	9,154	10,680	12,205	13,731	15,257
ECA-16	6,103	9,154	12,205	15,257	18,308	21,359	24,411	27,462	30,513

Fail-Safe (Minimum Torque At End-Of-Stroke) (In-Lb)

Model / PSI	20	30	40	50	60	70	80	90	100
ECA-05	124	186	248	310	372	434	496	558	620
ECA-07	248	372	496	620	744	868	992	1,116	1,240
ECA-10	496	744	992	1,240	1,488	1,735	1,983	2,231	2,479
ECA-12	992	1,488	1,983	2,479	2,975	3,471	3,967	4,463	4,958
ECA-14	1,983	2,975	3,967	4,958	5,950	6,942	7,933	8,925	9,917
ECA-16	3,967	5,950	7,933	9,917	11,900	13,884	15,867	17,850	19,834

Note: Published torque output are actual output torque values and do not contain safety factor.

Max Allowable PSI to Actuator Based on Valve MAST

	Examples: Compatible 3rd party Valve Model & Size (Note 2)					Max Allowed PSI to ECA (In Either Double-Acting Or Fail-Safe Setup)					
Valve Shaft Size	V150 / V200 / V300	8580 CL150 Cl300	8560 CL 150	8560 CL 300	Control Disk Cl150 CL300	ECA-05	ECA-07	ECA-10	ECA-12	ECA-14	ECA-16
1/2"	1"	2"	3"		2"	50 psi	27 psi				
5/8" x 1/2" (Note 1)	1 1/2" 2"					50 psi	27 psi				
5/8"	1 1/2" 2"	3"	4"	3"	3"		60 psi				
3/4"	3" 4"	4"	6"	4"	4"		110 psi	55 psi			
1"	6"	6"	8"	6"	6"		150 psi	105 psi	50 psi		
1-1/4"	8" 10"	8" 10"	10"	8"	8" 10"			150 psi	125 psi	60 psi	
1-1/2"	12"	12" 14"	12"	10"	12"				150 psi	75 psi	35 psi
1-3/4"	14"	16" 18"		12"						150 psi	75 psi
2"	16"	20"								150 psi	75 psi
2-1/8"	16"									150 psi	150 psi
2-1/2"	20"	24"									150 psi

Available actuators highlighted in grey based on valve shaft size

Max Allowable Air Pressure

For the following valve series, *regardless of double-acting or fail-safe set up,* set pressure regulator to below or equal to published pressure in accordance to graph on the left to avoid exceeding valve MAST.

Note (1): 5/8" shaft with 1/2" shaft spline.

Note (2): Based on publicly available data. All dimensions to be verified by customer prior to purchase confirmation. Contact Easytork for other valve series and max air supply.

Easytork is the sole warrantor of this product and is NOT affiliated or endorsed by Fisher, or any other Emerson Process Management Company

ECA Technical Data (Metric)

Torque Output

Double-Acting (NM)

Model / BAR	1.0	2.0	3.0	4.0	5.0	5.5	6.0	7.0
ECA-05	15.6	31.3	46.9	62.5	78.1	85.9	93.8	109.4
ECA-07	31.3	62.5	93.8	125.0	156.3	171.9	187.5	218.8
ECA-10	62.5	125.0	187.5	250.0	312.5	343.8	375.0	437.5
ECA-12	125.0	250.0	375.0	500.0	625.0	687.5	750.0	875.0
ECA-14	250.0	500.0	750.0	1,000.0	1,250.0	1,375.0	1,500.0	1,750.0
ECA-16	500.0	1,000.0	1,500.0	2,000.0	2,500.0	2,750.0	3,000.0	3,500.0

Fail-Safe (Minimum Torque At End-Of-Stroke) (NM)

Model / BAR	1.0	2.0	3.0	4.0	5.0	5.5	6.0	7.0
ECA-05	10.2	20.3	30.5	40.6	50.8	55.9	60.9	71.1
ECA-07	20.3	40.6	60.9	81.3	101.6	111.7	121.9	142.2
ECA-10	40.6	81.3	121.9	162.5	203.1	223.4	243.8	284.4
ECA-12	81.3	162.5	243.8	325.0	406.3	446.9	487.5	568.8
ECA-14	162.5	325.0	487.5	650.0	812.5	893.8	975.0	1,137.5
ECA-16	325.0	650.0	975.0	1,300.0	1,625.0	1,787.5	1,950.0	2,275.0

Note: Published torque output are actual output torque values and do not contain safety factor.

Max Allowable BAR to Actuator Based on Valve MAST

	Examples: Compatible 3rd party Valve Model & Size (Note 2)					Max Allowed PSI to ECA (In Either Double-Acting Or Fail-Safe Setup)					
Valve Shaft Size	V150 / V200 / V300	8580 CL150 Cl300	8560 CL 150	8560 CL 300	Control Disk Cl150 CL300	ECA-05	ECA-07	ECA-10	ECA-12	ECA-14	ECA-16
1/2"	1"	2"	3"		2"	3.7 bar	1.8 bar				
5/8" x 1/2" (Note 1)	1 1/2" 2"					3.7 bar	1.8 bar				
5/8"	1 1/2" 2"	3"	4"	3"	3"		4.4 bar				
3/4"	3" 4"	4"	6"	4"	4"		7.6 bar	3.8 bar			
1"	6"	6"	8"	6"	6"		10.0 bar	7.4 bar	3.7 bar		
1-1/4"	8" 10"	8" 10"	10"	8"	8" 10"			10.0 bar	8.8 bar	4.4 bar	
1-1/2"	12"	12" 14"	12"	10"	12"				10.0 bar	5.4 bar	2.7 bar
1-3/4"	14"	16" 18"		12"						10.0 bar	5.3 bar
2"	16"	20"								10.0 bar	5.3 bar
2-1/8"	16"									10.0 bar	10.0 bar
2-1/2"	20"	24"									10.0 bar

Available actuators highlighted in grey based on valve shaft size

Max Allowable Air Pressure

For the following valve series, *regardless of double-acting or fail-safe set up,* set pressure regulator to below or equal to published pressure in accordance to graph on the left to avoid exceeding valve MAST.

Note (1): 5/8" shaft with 1/2" shaft spline.

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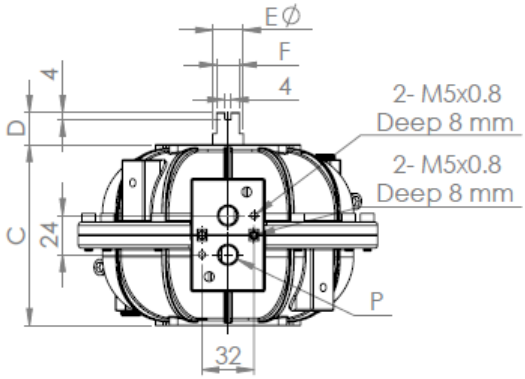
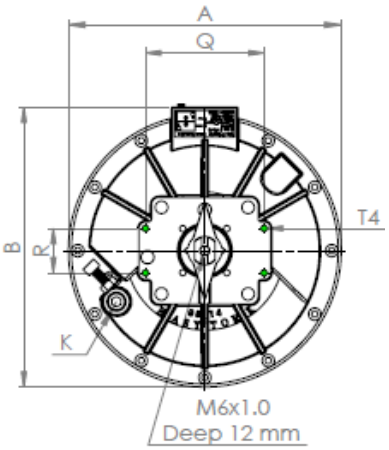
ECA and Auxiliary Interface Dimensions

Note: Individual model specs downloadable online





Note: Figures in drawings in mm.

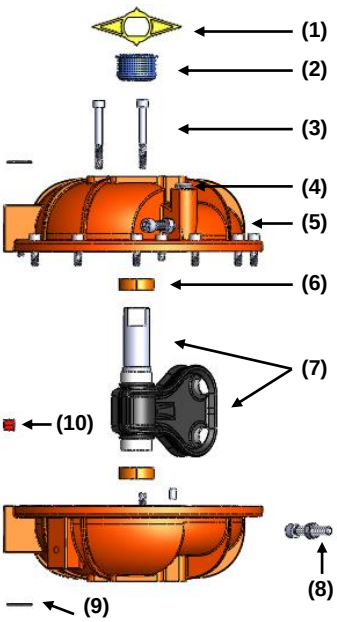
Imperial

Dimensions (inch)	Model					
	ECA-05	ECA-07	ECA-10	ECA-12	ECA-14	ECA-16
Actuator Dimensions						
A	7.24	9.41	11.61	15.20	18.50	23.03
B	7.44	9.61	11.81	15.31	18.70	23.21
C	4.41	5.71	7.17	9.37	11.26	14.08
F	0.55	0.55	0.94	0.94	0.94	0.94
E Ø	0.75	0.75	1.30	1.30	1.30	1.30
P	1/4-18NPT	1/4-18NPT	1/4-18NPT	1/4-18NPT	1/4-18NPT	
K	1/4-18NPT	1/4-18NPT	1/4-18NPT	3/8-18NPT	3/8-18NPT	3/8-18NPT
Standard Stop Bolt & Nut	M6x35mm	M8x45mm	M8x50mm	M12x60mm	M12x70mm	M16x100mm
Actuator Dimensions of Accessories Flange						
D	0.79	0.79	0.79	1.18	1.18	1.18
R	1.18	1.18	1.18	1.18	1.18	1.18
Q	3.15	3.15	3.15	5.12	5.12	5.12
T4	4x10-24UNC Deep 0.31	4x10-24UNC Deep 0.31	4x10-24UNC Deep 0.31	4x10-24UNC Deep 0.31	4x10-24UNC Deep 0.31	4x10-24UNC Deep 0.31

Metric

Dimensions (mm)	Model					
	ECA-05	ECA-07	ECA-10	ECA-12	ECA-14	ECA-16
Actuator Dimensions						
A	184	239	295	386	470	585
B	189	244	300	389	475	590
C	112	145	182	238	286	358
F	14	14	24	24	24	24
E Ø	19	19	33	33	33	33
P	1/4-19 BSPP	1/4-19 BSPP	1/4-19 BSPP	1/4-19 BSPP	1/4-19 BSPP	
K	1/4-19 BSPP	1/4-19 BSPP	1/4-19 BSPP	3/8-19 BSPP	3/8-19 BSPP	3/8-19 BSPP
Standard Stop Bolt & Nut	M6x35mm	M8x45mm	M8x50mm	M12x60mm	M12x70mm	M16x100mm
Actuator Dimensions of Accessories Flange						
D	20	20	20	30	30	30
R	30	30	30	30	30	30
Q	80	80	80	130	130	130
T4	4-M5x0.8 Deep 8	4-M5x0.8 Deep 8	4-M5x0.8 Deep 8	4-M5x0.8 Deep 8	4-M5x0.8 Deep 8	4-M5x0.8 Deep 8

ECA Bill of Material



Ref No	Description	Standard Version	Quantity
1	Yellow position & degree indicator	NBR	1
2	Blue graduated ring	NBR	1
3	Connecting bolt & nut	Stainless steel	1 lot
4	Plug	Nickel-plated steel	1
5	Housing	Aluminum A383 / epoxy external & internal finish	2
6	Vane / shaft bearing	PTFE lined steel baked bronze bushing	2
7	Vane / shaft assembly*	Stainless Steel or NPS bonded with modified CR	1
8	Stopper bolt and nut set	Stainless steel	2
9	Tag plate*	Stainless steel	1
10	Locator insert*	Plastic	2

* Items marked with an asterisk are included in repair kit.

Ordering Codes

Easytork Control Actuator Order Code – Valves with Spline Shaft

Product Type	Model Number	Valve Stem / Shaft Diameter		Actuator Attributes		
		Valve Stem	Valve Shaft Diameter	Thread	ECA Material *(Corrosion Rating)*	Seal *(Temp. Rating)*
ECA	- **X**	- **X**	- **X**	- **X**	**X**	- **X**
ECA: Easytork Control Actuator	**05**: 05 series **07**: 07 series **10**: 10 series **12**: 12 series **14**: 14 series **16**: 16 series	**F**: Spline Shaft	**1/2**: 1/2" shaft diameter **5/8 x 1/2**: 5/8" shaft diameter with 1/2" spline diameter **5/8**: 5/8" shaft diameter **3/4**: 3/4" shaft diameter **1**: 1" shaft diameter **1 1/4**: 1-1/4" shaft diameter **1 1/2**: 1-1/2" shaft diameter **1 3/4**: 1-3/4" shaft diameter **2**: 2" shaft diameter	**1**: Imperial **2**: Metric	**1**: Standard version	**1**: CR for all temp rating (-40°C to 120°C or -40°F to 248°F)

About

We believe in selling “easy”. Easytork brings differentiating features and benefits to the process control industry through our focus on innovation and quality. Easytork has been awarded numerous awards including:

2013 – Arch Grants Recipient

2015 – Accelerate St. Louis

2017 – Frost & Sullivan Product Innovation Award

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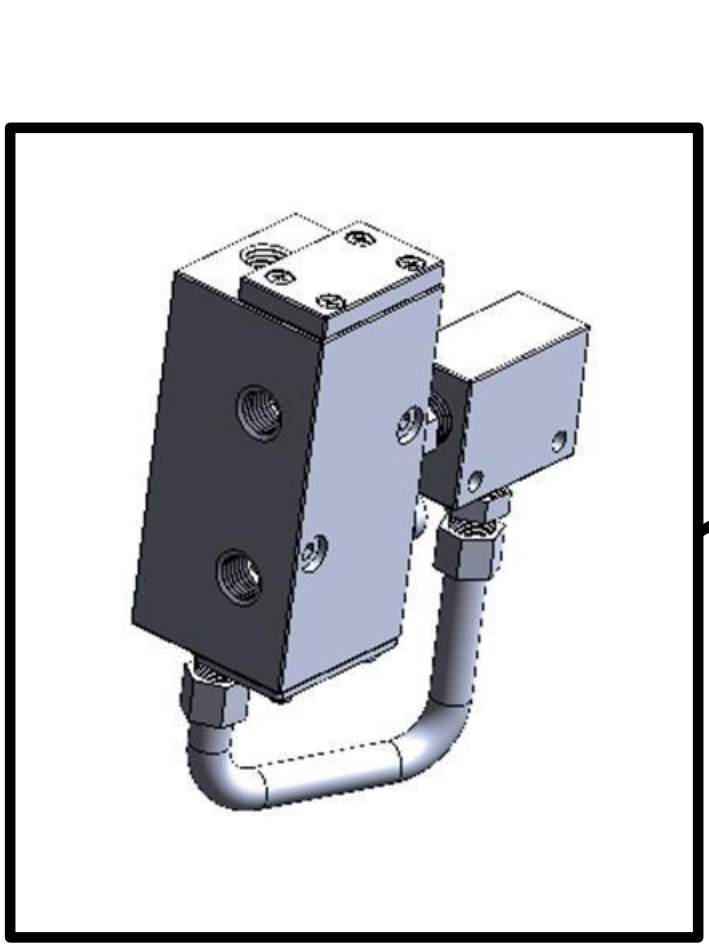
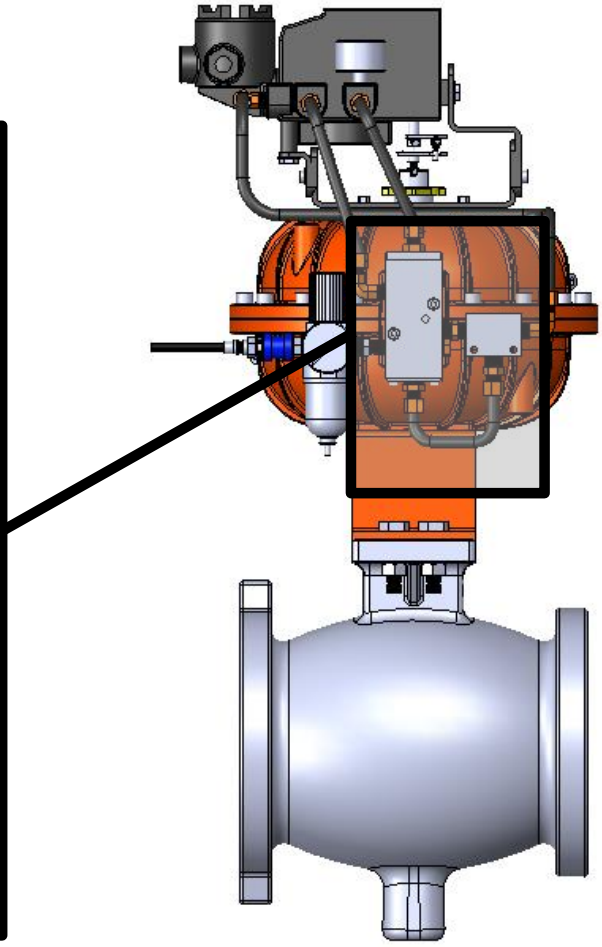
Control Valve Solutions
NAMUR Trip Valve





Patent Pending

Engineered for actuators with onboard reservoirs

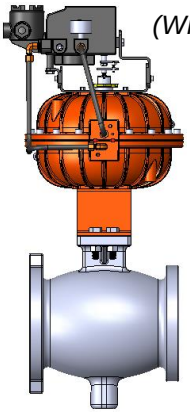
How to Use ECA Actuator With Positioners

NAMUR Trip Valve ("NTV")

ECAs will work with any positioner in the market. *Regardless of double-acting or fail-safe setup, user must use a double-acting positioner*. Installing or not installing Easytork's NAMUR Trip Valve ("NTV") with a double-acting positioner determines what function (fail-safe, in CW or CCW, or double-acting) the actuator has. Any 4-20ma or 3-15 psi positioner in the market works with the system.

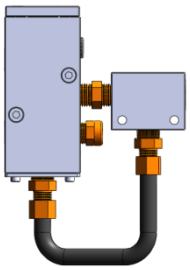
Convert Actuator to Fail-Safe or Double-Acting

(With DA Positioner)



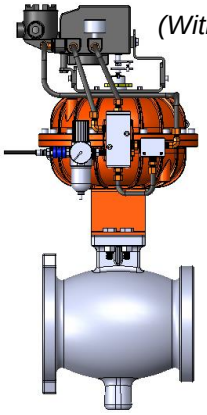
Double-Acting System

Without



With

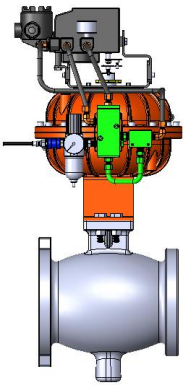
(With DA Positioner)



Fail-Safe System

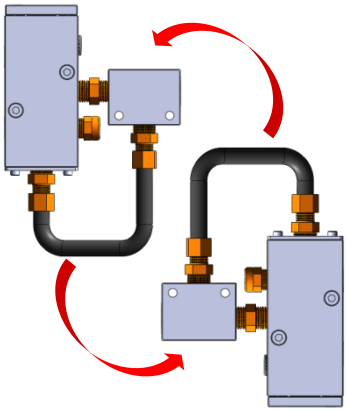
Convert System Between Fail-CW or Fail-CCW

(With DA Positioner)



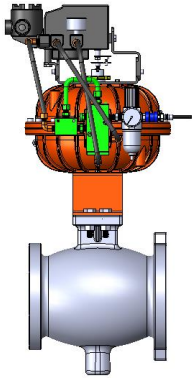
Fail-CW Mounting Style

Fail-CW



Fail-CCW

(With DA Positioner)



Fail-CCW Mounting Style

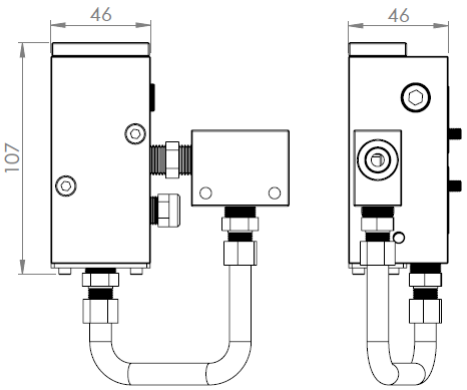
NTV Specifications

NTV Technical Specification		
Operating pressure [1]		2 - 10 bar (30 - 150 psi)
Operating medium		Air (dry or lubricated)
Flow l/min (Cv)	Port size: 1/4"	1000 l/min (Cv = 1.0)
Temperature range		-20°C to 80°C (-4°F to 176°F)

Note (1): If required, consult factory for minimum pressure setting for over 2 bar (30 psi).

Patents: NTV

Patent pending



(Figures in mm)

Ordering Codes

NAMUR Trip Valve (Direct Mount to ECA)

Prefix	Product Type	NAMUR Trip Valve Attributes		
		Seal *(Temp. Rating)*	NTV Body Material *(Corrosion Rating)*	Thread
C -	**NTV** -	**X**	- **X**	**X**
C: Complete product	**NTV**: NAMUR trip valve	**1**: Standard seal (for all temp -20°C to 80°C or -4°F to 176°F)	**2**: Chemical resistant version	**1**: Imperial **2**: Metric

About

We believe in selling “easy”. Easytork brings differentiating features and benefits to the process control industry through our focus on innovation and quality. Easytork has been awarded numerous awards including:

2013 – Arch Grants Recipient

2015 – Accelerate St. Louis

2017 – Frost & Sullivan Product Innovation Award

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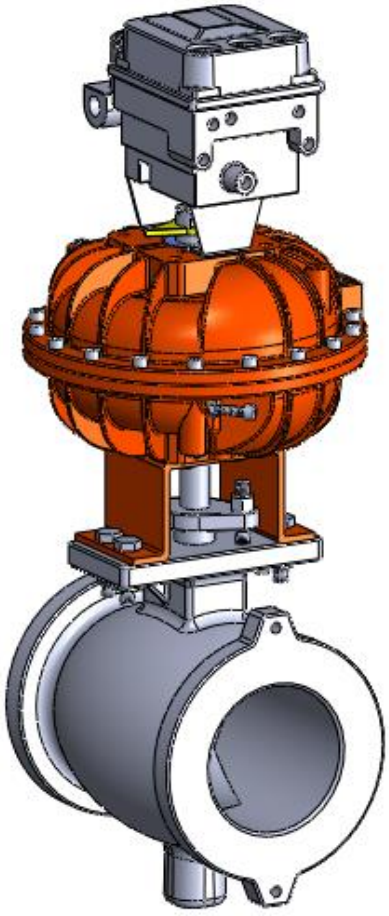
Easytork

Control Valve Packages Option With Easytork Control Actuator



Use YOUR Preferred

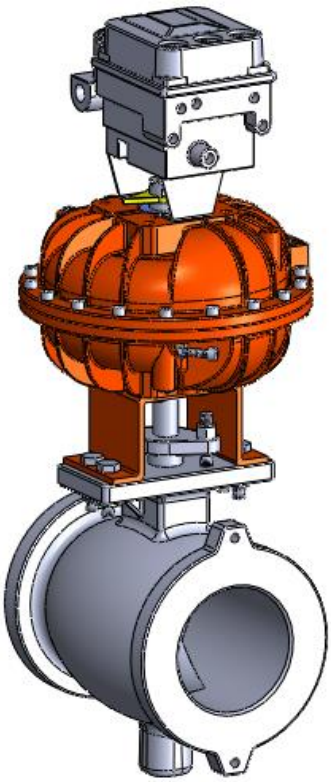
Positioner

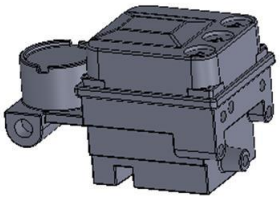
Valve

And Get Better Control Valve *Performance* and *Solutions* Through The ECA Actuator

Easytork Control Valve Package

Easytork Control Valves have features and benefits unparalleled in the market.

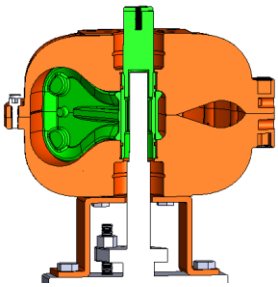




YOUR Preferred Positioner

(Easy Install to Actuator)

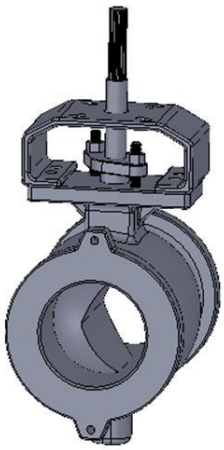
ECA compatible with any positioner in the market.



A Smarter Actuator

Instead of a spring & diaphragm, this control valve package uses an Easytork Control Actuator (“ECA”).

Simply changing the actuator to the ECA can improve the control characteristics of the package.



YOUR Preferred Control Valve

(Easy Install to Actuator)

- Retrofit onto existing valve
- New installation with your preferred valve brand

Improving Accepted Control Valves and Positioners

Sell on product performance, solutions and differentiation with all the familiar and accepted components.

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